Journal of Non-Crystalline Solids 112.(1989) ix–xiii
North-Holland, Amsterdam

CONTENTS

Preface vii

Organizing Committees viii

Contents ix

Section 1. Invited papers

Optical and magnetic properties of transition metal ion implanted silica
Whichard, G. and R.A. Weeks 1

Structural role of nitrogen in phosphate glasses
Day, D.E. 7

Halogenide, chalcogenide and chalcohalogenide glasses: materials, models, applications
Portier, J. 15

A structural study of the solid state vitrification of metals and oxides by ball milling
Suzuki, K. 23

Neutron scattering studies of network glasses
Wright, A.C., A.G. Clare, D.I. Grimley and R.N. Sinclair 33

Some aspects of phase separation in glasses
Jiang, Z. 48

Manufacture of porous glass
Huang, X. 58

Section 2. Structure and structure determination

Structure of binary K_2O–TiO_2 and Cs_2O–TiO_2 glasses
Sakka, S., F. Miyaji and K. Fukumi 64

A structural approach to bone adhering of bioactive glasses
Karlsson, K.H., K. Fröberg and T. Ringbom 69

Distinction between the concepts of crystallite and ordered microregions in glass
Zhu, P., Y. Zhang and P. Xia 73

Changes in structure and properties of selenium-based glassy alloys under annealing
Yang, H., S. Min, J. Lu and F. Zhang 76

A study of glass structure in Li_2O–SiO_2, Li_2O–Al_2O_3–SiO_2 and Li–Al–Si–O–N systems
Xu, X., J. Li and L. Yao 80

Structural change induced by laser annealing in hydrogenated amorphous silicon films
Zhong, B., Z. Lu, and R. Tang 85

A study on the polymeric distribution of $[SiO_4[^{4-}]$ tetrahedra in CaO–Al_2O_3–SiO_2 glasses
Chen, X. and N. Yang 90

Short-range structure of Na_2O–Al_2O_3–GeO_2 glasses by EXAFS analysis
Yin, C., K. Lu and Y. Zhao 96

Interatomic pair potentials for metallic alloy glasses $Ni_{81}B_{19}$ and $Ni_{63.7}Zr_{36.3}$
Li, J.C., N. Cowlam and F. He 101

Viscosity and structure of molten halide glasses based on chlorides, bromides and iodides
Ma, F. and M. Zhang 106
Magic angle spinning NMR of alkali phospho–alumino–silicate glasses
Dupree, R., D. Holland, M.G. Mortuza, J.A. Collins and M.W.G. Lockyer 111
Study of the structure of Bi_2O_3–Fe_2O_3 glasses
Dimitriev, Y., Ch. Petkov, E. Gattev, T. Stoilova and G. Gochev 120
Structural studies of new fluoride glasses based on the ZrF_4–FeF_3–PbF_2–YF_3 system
Han, J. and J. Cheng 126
NMR, IR and Raman spectra study of the structure of borate and borosilicate glasses
Tang, Y., Z. Jiang and X. Song 131
Structural study of iron in phosphate glasses
Lin, Y., Y. Zhang, W. Huang, K. Lu and Y. Zhao 136
NMR studies of lithium borophosphate glasses
Tian, F. and L. Pan 142
Raman studies of lithium borophosphate glasses
Jin, Y., X. Chen and X. Huang 147

Section 3. Glass formation and phase transformation

Study of formation and properties of the vitreous oxyfluoride system based on GeO_2, PbF_2 and ZnF_2
He, S., C. Xu and F. Gan 151
Research on bioactive glass-ceramics
Li, L. and H. Yu 156
Growth mechanism of diamond-like amorphous carbon films
Zhang, S.X. and R.G. Cheng 161
Study of silver-free photochromic glasses
Liu, J., Y. Chen, K. Yi, K. Zhang and Y. Mao 165
Study of the aluminium anomaly in Al-doped silica glasses
Liu, X., Z. Gu and O. He 169
Studies of new mixed halide glasses
Zhang, K. and C. Zhang 173
The rotary gas jet process for glass wool formation
Ikeda, K., S. Onda and N. Osato 177
New near-infrared filter glasses coloured by bismuth and cadmium chalcogenides
Liu, Z. and J. Cheng 180
Fusion of glasses containing ceria and titania
Xu, S., W. Tang and W. Huang 186
Crystallization of Bi–Zn–Fe–B–O glasses
Dimesso, L., G. Gnappi, A. Montenero, D. Fiorani and L.D. Pye 191
Processes for silica glass powder sintering
Samuneva, B., P. Vinarov and M. Dimitrova 198
Crystallization behaviour of chalcogenide glasses containing Sn
Min, S., H. Yang and X. Zhang 204
Mechanism of the catalytic effect of Cr_2O_3 on the crystallization of glasses
Shen, D. and L.A. Orlova 207
Measurements of activation energy in the initialization process of amorphous GeTe films
Matsushita, T., T. Nakau, A. Suzuki and M. Okuda 211
Phase separation, structure and crystallization of CaO–MgO–Al_2O_3–SiO_2–P_2O_5–F glasses
Luo, L. and J. Li 215

Evaporated Cu–Al amorphous alloys and their phase transition
Yan, H., F. Gan and D. Huang 221
Phase separation and crystallization in fluorozirconate glasses
Li, R., F. Gan and Q. Chen 228
Study of phase separation in $Na_2O–B_2O_3–SiO_2$ glasses by TEM and optical diffraction
Fan, X. and Q. Chen 232
Kinetic study of the crystallization of $ZrF_4–BaF_2–LaF_3–AlF_3$ glasses
Dong, D., F. Ma, Z. Yu and M. Zhang 238
Effects of V_2O_5 on phase separation and leaching of $Na_2O–B_2O_3–SiO_2$ glasses
Zhang, C. and R. Ye 244
Kinetics of phase separation of soda–lime–silica glass with minor P_2O_5 additions
Du, P., Z. Ding and Z. Jiang 251
Relationship between the spatial distribution of crystallites and pyroelectric constant in polar BTS glass-ceramics
Ding, Z., Y. Zhao, W. Wang and Y. Huang 258
Kinetic studies of the crystallization of $Te_{92}Pb_8$ thin films
Jiang, F., H. Wang, Y. Sun and F. Gan 263
Effect of phase separation on nucleation and growth of magnesium–aluminium–titanate crystals in $MgO–Al_2O_3–SiO_2–TiO_2$ glass
Zou, X., M. Yamane, J. Li and C. Wang 268

Section 4. Spectral, optical, electrical and mechanical properties

Vibrational spectra and structure of $AlF_3–YF_3$ fluoride glasses
Chen, H. and F. Gan 272
Quantum size effects in a heat-treated CdSe-doped glass
Yan, F. and J.M. Parker 277
Optical absorption spectra of Ni^{2+} ions and IR spectra in $PbO–GeO_2$ glasses containing Ga_2O_3, As_2O_3 or Sb_2O_3
Oyamada, R., A. Kishioka and K. Sumi 282
Spectral properties of Nd^{3+} in aluminophosphate glasses
Jiang, Y., S. Jiang and Y. Jiang 286
The optical and electrical properties of Te–In–Sb films during their phase transition
Wang, H., F. Jiang and F. Gan 291
Properties and structure of nitrogen-doped phosphate glasses
Wang, C. and L. Liu 296
Effect of phase separation on the optical properties of photochromic glasses containing silver halides
Feng, X. and W. Gao 302
Crystallization of fluoroaluminate glasses
Hu, H., F. Lin, Y. Yuan and J. Feng 306
Electrochromic kinetics of amorphous WO_3 films
Luo, Z., Z. Ding and Z. Jiang 309
Structure and electrical conductivity of semiconducting and superionic conducting silver vanadate glasses
Nishida, T., H. Ide, Y. Takashima, T. Yagi, S. Tomariguchi, T. Ishizuka and A. Sakai 314
Dielectric constants and conductivity relaxation of $Li_2O–B_2O_3–WO_3$ glasses
Huang, P., X. Huang and F. Gan 318
Anionic conduction in lead oxyfluoride glasses
Wang, Y., A. Osaka and Y. Miura 323

A study of Cu–As–Se chalcogenide glass electrodes and their electronic band structure
Cheng, J. and Z. Liang 328
Properties and structure of niobosilicate glasses
Gao, H., Z. Wang and S. Wang 332
Inelastic deformation and structure of borate glasses
Hirao, K., J. Matsuoka and N. Soga 336
Photoelastic effects in some fluoride glasses based on the ZrF_4–BaF_2 system
Matusita, K., H. Kato, T. Komatsu, M. Yoshimoto and N. Soga 341

Section 5. Chemical properties, surfaces and interfaces

Mixed-alkali effect in fluoride glasses
Zhao, X. and S. Sakka 347
Fabrication of glass microlenses by ion diffusion under an electric field
Yoshida, H., T. Kataoka and M. Tanaka 352
Studies of interface reactions between glass ceramic coatings and metals
Hong, F. and D. Holland 357
Improving the electron browning in Na_2O–CaO–SiO_2 glass by ion exchange
Shibaoka, K. and K. Suzuki 364
Ion exchange strengthening of neodymium phosphate laser glass
Zhu, C., Z. Yao, J. Zhou, M. Zhang and Q. Zhang 368
Distributions of sodium oxide concentration and refractive index in ion-exchanged glass
Li, J., J. Li and Z. Fang 373
Effect of stress on water corrosion of borate glass
Soga, N., Z. Zhang, K. Nakanishi and K. Hirao 377
Vaporization of alkali borosilicate glasses
Asano, M., T. Kou and Y. Mizutani 381
Interaction between glasses and alkali metal vapours
Samuneva, B., P. Djambaski and K. Avramova 385
Water resistance of cadmium-contanining fluorozirconate glasses
Cheng, J., R. Zhang and E.G. Rakov 392
A mass spectrometer method for the investigation of Li self-diffusion in mixed alkali glasses
Du, Y., G.H. Frischat and W. Beier 399
Study of the surface hardening of photochromic glass by nitrogen ion implatation
Tao, Y., L. Lin and B. Wang 404
Formation and properties of Y–Al–Si–O–N glasses in the grain boundaries of Si_3N_4 ceramics
Ding, Y., Z. Ding and Z. Jiang 408
Analysis of glass surface states in the Na_2O–SiO_2–ZrO_2–TiO_2 system
Shen, L. and M. Yang 413

Section 6. The sol–gel glass process

Organic modification of glass structure. New glasses or new polymers?
Schmidt, H. 419
Preparation and spectroscopic studies of alkoxide-derived V_2O_5–GeO_2 sols and coatings
Hou, L. and S. Sakka 424
Evolution of the structure of gels of the system SiO_2–Al_2O_3–P_2O_5 submitted to thermal treatment
Sheng, L. and J. Zarzycki 428
Preparation of B_2O_3–SiO_2 and MO–B_2O_3–SiO_2 (M = Zn, Mg) glass films by the sol–gel method
Tohge, N. and T. Minami 432

Continuous silica glass fiber produced by sol–gel process
Matsuzaki, K., D. Arai, N. Taneda, T. Mukaiyama and M. Ikemura 437
Preparation and characterization of zirconium oxide coatings prepared from $ZrCl_2(OC_2H_5)_2$ by the sol–gel process
Yang, L. and J. Cheng 442
Sol–gel process kinetics for $Si(OEt)_4$
Yang, H., Z. Ding, Z. Jiang and X. Xu 449
The migration of alkali ions from glass substrates coated with sol–gel barrier films
Fu, G., J. Du, D. Pan and O. He 454

Author index 459
Subject index 463